UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service

ARS-22-2
August 1954

RESEARCH BEGINS ON PLUM ISLAND

The Plum Island Animal Disease Laboratory, which will be devoted primarily to research on foot-and-mouth disease, has just gone into partial operation nearly 2 years ahead of previous expectations.

This advance in the timetable of research operations was made possible by the fact that the Chemical Corps of the U.S. Army turned over to the Department of Agriculture, on a use permit, a rehabilitated building originally built for defense purposes. Full transfer will be made later. In these facilities the laboratory was able to enter at once upon a trial-run research project on vesicular stomatitis, one of the diseases that cannot under usual circumstances be differentiated from foot-and-mouth disease except by biological and laboratory analysis. Initial studies with the foot-and-mouth virus are expected to begin within a few months.

Thus Plum Island, off the northeastern tip of Long Island, N.Y., ceases to be a military installation and becomes a station for the battle against virus diseases. Fort Terry was established in 1897. It was a Coast Artillery location during World War I, and continued as an Army installation except for a short period following World War II until July 1, 1954. The island is about 3 miles long and 1 mile wide, and received its name from the abundance of wild plums growing on it.

One-Unit Laboratory

The new facility is a single-unit building, in which it will be possible to carry on only one line of research at a time.

The new and much larger laboratory, for which Congress appropriated $10 million and for which ground has been broken, will have four complete and self-contained research units, in which from one to four separate investigations can be carried on at once. The larger building is scheduled for completion about January 1, 1956.

The larger laboratory facilities are already much needed. It would take at least five times as long to arrive at the same results with the present limited setup. This is important in relation to a disease that has six known virus types and 16 strains. Furthermore, most of the basic work has to be done with large animals, though small laboratory animals such as mice and guinea pigs will be used for many purposes.

Plans for the Future

Plum Island will have essentially two programs, one as a service unit, one as a research unit. On the service side, it will provide diagnostic facilities for rapid and positive identification of the causes of disease outbreaks, plus facilities to supplement and support animal-disease control programs. Plans are now that the present laboratory will be devoted to the diagnostic and other service work when the new and larger laboratory goes into operation.

On the research side, Plum Island has an eight-point program on foot-and-mouth disease and such other exotic diseases as may require investigation:

1. Investigation of improved diagnostic procedures.
2. Improvement of the methods of artificial cultivation of viruses.
3. Studies of various types and strains of viruses.
4. Investigation of modes of transmission of viruses.
5. Search for improved methods of disinfecting contaminated premises and materials.
6. Studies of relative susceptibility of different species, breeds, and classes of animals and their role in the perpetuation and spread of disease.
7. Investigations directed toward development of more effective vaccines.
8. Fundamental studies of chemical and physical properties of viruses.

Super-Safety Precautions

There has been a demand for research on foot-and-mouth disease in the United States for 30 years -- since the 1924 outbreaks in California and Texas. But cattlemen, Members of Congress, and Government officials have been loath to bring the virus of this highly communicable disease onto the mainland of the United States, even though it might be for the best of purposes and be put into the most careful hands. Therefore, when Congress passed a law in 1948 permitting the establishment of such an institution, it specified that the laboratory should be on a coastal island separated from the mainland by deep navigable water. Plum Island is more than 1 1/2 miles from Long Island, and the water reaches a depth of 190 feet.

The present laboratory and the four-unit structure under construction are so planned, equipped, and operated as to constitute probably the safest facilities in the world for handling virus. There is a double fence around the buildings, the inner one set in concrete 3 feet deep, to bar all intruders. Rigid control is established for all persons, animals, and materials passing into or out of the laboratories. Persons entering must leave their street clothing and personal belongings in an outer locker room and wear laboratory clothing while in the building. When leaving, they must take off their laboratory clothing and take a shower before putting on street clothing again. A laundry within the laboratory will clean and sterilize the garments used in contaminated areas. Only healthy animals are chosen for experiments and they are quarantined before entering the laboratory. While in quarantine they are treated to eliminate such external parasites as ticks. Animal feeds are processed to kill insects, rodents, and other vermin before they are taken into the laboratory.

Contaminated areas are sealed off. Animals are kept in windowless buildings lighted through glass bricks. Solid wastes, including animal carcasses, are incinerated. Liquid wastes are sterilized by heat before they are allowed to leave the laboratory. Even the air is controlled. None is allowed to move outward from contaminated areas to other parts of the laboratory. A series of airlocks with differing pressures insure that the air moves from an outside to an inside direction as personnel and materials are taken into the laboratory. The air leaving the buildings is decontaminated by a system of electrical and mechanical filters. No other laboratory in the world can match this for all-out security.

The scientific staff now operating at Plum Island numbers about 20, headed by the Director, Dr. M.S. Shahan. When all units are completed and the full laboratory is in operation, the scientific staff will increase to about 50.

The present facility has space for about 35 large animals, and the enlarged facility will ultimately house about 140.

Background

The United States has had nine outbreaks of foot-and-mouth disease, the first in 1870 and the last in 1929. In all but two instances the disease was eradicated and quarantines removed within a few months, but it took nearly 2 years to complete the eradication in 1914 and 1924.

During the 1924 outbreaks in California and Texas, serious need was recognized for more technical information about the disease. As a result, the U.S. Department of Agriculture established a Foot-and-Mouth Disease Commission, which carried out research in Europe during 1925 and 1926. The Commission contributed materially to the knowledge of the disease at that time. In 1947, following an outbreak of the disease in Mexico, the Foot-and-Mouth Disease Advisory Committee recommended that further research be started at once in cooperation with European laboratories. Cooperative research, started in 1948 in Denmark, England, and the Netherlands, is being continued. The Committee also recommended that research facilities be constructed in the United States as soon as possible.

After authorizing the laboratory in 1948, the Congress in 1949 appropriated $500,000 for the preparation of plans and specifications of laboratory buildings and facilities. A further appropriation of $10 million was made in 1952 to construct the laboratory. Congress stipulated that the laboratory must be built on an island and that public hearings be held in the vicinity of the proposed site. Hearings were held in the Connecticut-Long Island area in July 1952, and Plum Island was selected by the Secretary of Agriculture.

An operating budget of $1.9 million is available for the laboratory during fiscal 1954-55, but more funds will be supplied when the full facility is in operation.

T T TT T T